

Preliminary Amendment

1. (Amended) A method of manufacturing a
photomultiplier tube having a faceplate [(3)], a
photocathode [(3a)] for emitting electrons in response to
5 light incident on the faceplate [(3)], an electron
multiplying section [(9)] for multiplying the electrons
emitted from the photocathode [(3a)], an anode [(12)] for
outputting an output signal based on the electrons
multiplied by the electron multiplying section [(9)], a stem
10 plate [(4)] for fixedly supporting the electron multiplying
section [(9)] and the anode [(12)] with stem pins [(10)],
and a side tube [(2)] with the stem plate [(4)] fixed on one
open end and the faceplate [(3)] fixed on the other open end
and enclosing the electron multiplying section [(9)] and the
15 anode [(12)], the method [characterized by] comprising the
steps of:

providing a metal side tube [(2)] formed of metal and
a stem plate [(4)] such that at least a portion contacting
the metal side tube [(2)] is formed of metal;

20 aligning the metal side tube [(2)] with the stem plate
[(4)] so that an outer edge of the stem plate [(4)] does not
protrude further externally than an outer surface of the
metal side tube [(2)]; and

fusing the metal side tube [(2)] to the stem plate
25 [(4)] at a point of contact [(F)] between the metal side

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tube [(2)] and the stem plate [(4)] by laser welding or electron beam welding to form an airtight vessel.

2.(Amended) The method of manufacturing a photomultiplier tube as recited in claim 1, [characterized in that] wherein the metal side tube [(2)] is engaged with the stem plate [(4)] such that only the outer surface of the metal side tube [(2)] is exposed on an outer surface of the airtight vessel formed from the metal side tube [(2)] and the stem plate [(4)] by laser welding or electron beam welding.

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cont.
3.(Amended) The method of manufacturing a photomultiplier tube as recited in claim 1, [characterized in that] wherein the metal side tube [(2)] is engaged with the stem plate [(4)] such that the outer surface of the metal side tube [(2)] and at least a portion of an outermost edge of the stem plate [(4)] are exposed on an outer surface of the airtight vessel formed from the metal side tube [(2)] and the stem plate [(4)] by laser welding or electron beam welding.

20 4.(Amended) A photomultiplier tube [including] comprising:

a faceplate [(3)],

a photocathode [(3a)] for emitting electrons in response to light incident on the faceplate [(3)],

25 an electron multiplying section [(9)], disposed inside

an airtight vessel [(5)], for multiplying the electrons emitted from the photocathode [(3a)], and

an anode [(12)] for outputting an output signal based on the electrons multiplied by the electron multiplying section [(9)], [characterized in that] wherein the airtight vessel [(5)] comprises:

a stem plate [(4)] for fixedly supporting the electron multiplying section [(9)] and the anode [(12)] with stem pins [(10)];

a metal side tube [(2)] with the stem plate [(4)] fixed on one open end, and enclosing the electron multiplying section [(9)] and the anode [(12)]; and

a faceplate [(3)] fixed on the other open end of the metal side tube [(2)],

wherein the stem plate [(4)] is welded on the one open end of the metal side tube [(2)], a top surface [(4C)] of the stem plate [(4)] contacting a bottom end of the metal side tube [(2)] such that an outer surface [(2b)] of the metal side tube [(2)] is flush with an edge surface [(4b)] of the stem plate [(4)], at least a portion of the top surface [(4C)] of the stem plate [(4)] in contact with the metal side tube [(2)] being formed of metal.

5.(Amended) The photomultiplier tube as recited in claim 4, [characterized in that] wherein a cutout portion [(20a, 40d)] is formed in the top surface [(4C)] on an edge

of the stem plate [(4)] for supporting the bottom end [(2a)] of the metal side tube [(2)].

6.(Amended) The photomultiplier tube as recited in claim 4, [characterized in that] wherein the metal side tube [(2)] is fusion welded to the stem plate [(4)].

7.(Amended) The photomultiplier tube as recited in [any one of claims 4 through 6, characterized in that] claim 4, wherein the fusion welding is laser welding or electron beam welding.

8.(Amended) The photomultiplier tube as recited [any one of claims 4 through 7 characterized in that] in claim 4, wherein entirety of the stem plate [(4)] is formed of metal.

9.(Amended) The photomultiplier tube as recited [any one of claims 4 through 8, characterized in that] in claim 4, wherein the stem plate [(4)] comprises a metal stem support member [(40)], and a glass stem plate [(41)], the metal stem support member [(40)] being in contact with the bottom end of the metal side tube [(2)] extending substantially in an axial direction of the metal side tube [(2)].

10. (Amended) A radiation detector [including] comprising:

a scintillator [(56)] for emitting fluorescent light in response to radiation generated from an object [(P)] of analysis[.];

a plurality of photomultiplier tubes [(1)], each

added
new 10.3
having a faceplate [(3)] disposed in opposition to the
scintillator [(56)], for outputting electric charges based
on fluorescent light emitted from the scintillator [(56)],
and

5 a position calculating section [(59)] for performing
calculations on the electric charges output from the
plurality of photomultiplier tubes [(1)] and outputting
positioning signals of radiation issued in the object [(P)]
of analysis,

10 [characterized in that] wherein each of the plurality
of the photomultiplier tubes [(1)] comprises:

a photocathode [(3a)] for emitting electrons in
response to light incident on the faceplate [(3)];

15 an electron multiplying section [(9)], disposed inside
an airtight vessel [(5)], for multiplying the electrons
emitted from the photocathode [(3a)]; and

an anode [(12)] for outputting an output signal based
on the electrons multiplied by the electron multiplying
section [(9)], and wherein

20 the airtight vessel [(5)] comprises:

a metal stem plate [(4)] for fixedly supporting the
electron multiplying section [(9)] and the anode [(12)] with
stem pins [(10)];

25 a metal side tube [(2)] with the metal stem plate
[(4)] fixed on one open end, and enclosing the electron

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multiplying section [(9)] and the anode [(12)], wherein the metal stem plate [(4)] is fixed by welding to the metal side tube [(2)] such that an outermost edge of the metal stem plate [(4)] does not protrude outward from an outer surface

5 of the metal side tube [(2)]; and

the faceplate [(3)] fixed on the other open end of the metal side tube [(2)].